

Remarks

Applicant has amended claims 1 and 18, and cancelled claims 6 and 9. No new matter has been added to the application by virtue of the present amendment.

Therefore, claims 1-5, 7-8, and 18-20 are pending in the subject application by virtue of the present amendment. Claims 10 – 17 have been withdrawn. Applicant respectfully submit that the amendments to claims 1 and 18 more clearly define Applicant’s application and distinguish it over the prior art of record. It is respectfully requested that the subject application be reconsidered and passed to issuance in view of this amendment and response.

Claim Rejections - 35 U.S.C. § 102(b)

The Examiner rejected claims 1 and 9 under 35 U.S.C. § 102(b), as being anticipated by Kaneoya, U.S. Patent No. 3,601,889. With regard to independent claim 1, the Examiner indicated that Kaneoya discloses a thin-film resistor incorporating the elements claimed by Applicant. The Examiner stated that Fig. 1 of Kaneoya teaches a conductive layer 2 (Ni-Cr) (col. 2, lines 10-13) formed on a surface including end portions tapered at an angle less than about 90 degrees with respect to the surface to provide contact regions for coupling to the thin-film transistor. Applicant respectfully traverse the rejection under 35 U.S.C. § 102(b), and submit that Kaneoya does not anticipate or suggest Applicant’s amended independent claim 1.

Applicant has amended independent claim 1 to recite the limitations of a constant angle less than about 90 degrees with respect to the surface, a dielectric layer formed on the conductor layer, and contacts abutting the contact regions to provide electrical coupling to the thin-film resistor. Kaneoya does not anticipate or suggest a dielectric layer formed on the conductor layer. The dielectric layer substantially covers the entire top surface of the conductive layer and has a number of important properties as a result of its presence. The dielectric layer comprises an electrically insulating material and behaves, in one aspect, as an etch stop and prevents the conductor layer from being etched in a subsequent etch process, therefore preventing an adverse affect on the resistance value of the conductor layer.

Applicant respectfully submits that, “A claim is anticipated only if each and every element

as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” MPEP §2131. In this case, Kaneoya does not anticipate or suggest the element of a dielectric layer formed on the conductor layer as claimed by Applicant. The Kaneoya reference teaches a structure that does not have a dielectric layer nor the same properties and structure as that of the structure claimed by Applicant. Accordingly, Applicant respectfully submits that Kaneoya is inapposite to the invention claimed herein.

Claim 9 has been canceled.

Therefore, Applicant respectfully submits that the rejection of Claims 1 and 9 under 35 U.S.C §102(b) has been overcome and are in condition for allowance.

The Examiner rejected claims 1-3 under 35 U.S.C. § 102(b), as being anticipated by Komeda, U.S. Patent No. 6,144,287. With regard to independent claim 1, the Examiner indicated that Komeda discloses a thin-film resistor incorporating the elements claimed by Applicant. The Examiner stated that Fig. 2 and 9 of Komeda teaches a conductive layer 4 (silver-palladium) (col. 3, lines 63-65) on a surface including end portions (4a and 4b) tapered at an angle of 45 degrees (see abstract) with respect to the surface to provide contact regions for coupling to the thin-film transistor. Applicant respectfully traverses the rejection under 35 U.S.C. § 102(b), and submits that Komeda does not anticipate or suggest Applicant’s amended independent claim 1.

Applicant has amended independent claim 1 to recite the limitations of a constant angle less than about 90 degrees with respect to the surface, a dielectric layer formed on the conductor layer, and contacts abutting the contact regions to provide electrical coupling to the thin-film resistor. In Komeda the conductive layer end portions (4a and 4b) referenced by the examiner are actually end portions from two separate conductive layers each having only one end portion that is tapered at a 45 degree angle. This is in contrast with the present invention where both ends of the conductive layer is tapered. As noted above, Applicant has amended independent claim 1 to provide for electrical coupling between the contacts and the thin-film resistor (angled portions of the conductive layer). Thus, Applicant’s invention provides “tapered” contact regions for electrical coupling to the thin-film resistor at each end of the conductive layer. As stated by the

Examiner, Komeda does not disclose an electrical coupling between the “tapered” contact regions and contacts.

Applicant respectfully submit that, “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” MPEP §2131. In this case, Komeda does not anticipate or suggest the elements of both end portions of the conductive layer being tapered and/or electrical coupling between tapered end portions of the thin-film resistor and contacts as claimed by Applicant. Accordingly, Applicant respectfully submits that Komeda is inapposite to the invention claimed herein.

Claims 2-3 are dependent upon Claim 1, and as discussed above, Claim 1 is not anticipated by Komeda because Komeda does not disclose all the elements of claim 1, as amended. Therefore, Applicant respectfully submits that the rejection of Claims 1-3 under 35 U.S.C §102(b) has been overcome and are in condition for allowance.

The Examiner rejected claims 1, 4, 6, and 9 under 35 U.S.C. § 102(b), as being anticipated by Shiiki, U.S. Publication No. 2002/0020879. With regard to independent claim 1, the Examiner indicated that Shiiki discloses a thin-film resistor incorporating the elements claimed by Applicant. The Examiner stated that Fig. 5A and 5B of Shiiki teaches a conductive layer 3- (TaN) (paragraph [0064]) formed on a surface including end portions tapered at an angle less than about 90 degrees with respect to the surface to provide contact regions for coupling to the thin-film transistor. Applicant respectfully traverse the rejection under 35 U.S.C. § 102(b), and submits that Shiiki does not anticipate or suggest Applicant’s independent claim 1, as amended.

Applicant has amended independent claim 1 to recite the limitations of a constant angle less than about 90 degrees with respect to the surface, a dielectric layer formed on the conductor layer, and contacts abutting the contact regions to provide electrical coupling to the thin-film resistor. Fig. 5A and 5B of Shiiki discloses a conductive layer that has end portions that are not at a constant angle, but rather are at multiple angles. The end portions of the conductive layer are not at a constant angle as disclosed and claimed in the present invention. In Shiiki the conductive layer is actually etched into by the electrodes (electrical contacts) to make electrical contact, thus

altering the resistance value of the resistor. In the present invention, once the conductive layer is formed and the constant angled portions (contact regions) of the dielectric and conductive layers are formed, the electrical contacts of the thin-film resistor are positioned abutting to the contact regions, thus overcoming the disadvantage of Shiiki by not altering the resistance value of the resistor.

Applicant respectfully submits that, “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” MPEP §2131. In this case, Shiiki does not anticipate or suggest the elements of constant angled end portions and/or having an abutted electrical coupling as claimed by Applicant. The Shiiki reference teaches non-constant angled end portions and electrical contacts etched into the conductive layer for electrical coupling, neither of which have the same properties and structure as that of the structure claimed by Applicant. Accordingly, Applicant respectfully submits that Shiiki is inapposite to the invention claimed herein.

Claim 4 is dependent upon Claim 1; and as discussed above, Claim 1 is not anticipated by Shiiki because Shiiki does not disclose all the elements of claim 1.

Claims 6 and 9 have been canceled.

Therefore, Applicant respectfully submit that the rejection of Claims 1, 4, 6, and 9 under 35 U.S.C §102(b) has been overcome and are in condition for allowance.

Claim Rejections - 35 U.S.C. § 103(a)

The Office Action stated that claims 2, 3, 5, and 18-20 are rejected under 35 U.S.C. § 103(a), as being unpatentable over Shiiki. The Examiner rejected claim 6, 7, and 8 under 35 U.S.C. § 103(a), as being unpatentable over Kaneoya in view of Shiiki.

Regarding the rejection of claim 2, 3, and 5, all of which are dependent upon claim 1, as amended, Applicant respectfully submits that claim 1, as amended, is neither anticipated nor suggested by Shiiki as was discussed herein above. Thus, Shiiki does not teach or suggest

Applicant's claims 2, 3, and 5.

Applicant has amended independent claim 18 to recite the limitations of a constant angle less than about 90 degrees with respect to the surface, a dielectric layer formed on the conductor layer, and contacts abutting the contact regions to provide electrical coupling to the thin-film resistor. For the same reasons as put forth above with regard to Applicant's amended independent claim 1, Applicant respectfully submits that Shiiki, does not teach or suggest Applicant's claim 18, as amended, or claims dependent thereupon.

Based on the foregoing, Applicants respectfully traverse the rejection under 35 U.S.C. § 103(a) and submit that the rejection to claims 2, 3, 5, and 18-20 has been overcome.

As discussed above, Applicant respectfully submits that Kaneoya, individually or in combination with Shiiki does not teach or suggest Applicant's claim 1, as amended, or claims dependent thereupon. Applicant has canceled claim 6.

Based on the foregoing, Applicants respectfully traverse the rejection under 35 U.S.C. § 103(a) and submit that the rejection to claims 6, 7, and 8 has been overcome.

Conclusion

In light of the foregoing remarks, all of the claims now presented are believed to be in condition for allowance, and Applicant respectfully request that the outstanding rejections be withdrawn and this application be passed to issue at an early date.

The Examiner is urged to call the undersigned at the number listed below if, in the Examiner's opinion, such a phone conference would aid in furthering the prosecution of this application.

Respectfully submitted,
For: Ebenezer E. Eshun

By: /Ryan K. Simmons/
Ryan K. Simmons
Registration No. 45,848
Telephone No.: (802) 769-1809
Fax No.: (802) 769-8938
EMAIL: rksimmon@us.ibm.com

International Business Machines Corporation
Intellectual Property Law - Mail 972E
1000 River Road
Essex Junction, VT 05452